

# SYSTEM FOR CAPTURING MULTIMEDIA INFORMATION USING A HAND WRITING STYLUS PEN WHICH PERFORMS SIGNAL-TO-DATA CONVERSION INSIDE THE PEN AND STORES DATA IN THE MEMORY INSIDE THE PEN

## BACKGROUND

### 1. Field of the Invention

The present invention relates to a multimedia information capturing apparatus for capturing multimedia information so as to transfer the information into a computer system therefrom, and in particular, the present invention relates to the apparatus for capturing image and voice information.

The multimedia information capturing apparatus is widely used but having various steps such as capturing multimedia information, converting the captured multimedia information into electric data, storing the electric data and transferring the stored electric data into a computer system such as a personal computer.

Since the multimedia information capturing apparatus, which will be simply called "multimedia capturing apparatus" hereinafter, becomes more portable recently, the apparatus is required to perform the above various steps in more simple and high efficiency.

### 2. Description of the Related Art

FIG. 1 shows a block diagram of a portable multimedia capturing apparatus of the prior art. Two multimedia capturing apparatus (100 and 100') are shown in FIG. 1 for explaining an example of data transfer performed between the two apparatus. The multimedia capturing apparatus 100 or 100' consists of a data processing unit (DATA PROC UNIT) 101, an imaging device (IMAGING DEVICE) 102 such as an electronic steal camera, an image data transfer medium (MEDIUM) 103 and a microphone (MIC) 104 attached to DATA PROC UNIT 101. However, there is a feature that both of IMAGING DEVICE 102 and MEDIUM 103 are physically separated from DATA PROC UNIT 101.

The DATA PROC UNIT 101 consists of a computer (COMP) 101a, a monitor (MON) 101b, a keyboard (KEYBOARD) 101c and a pointing mouse (MOUSE) 101d. A hand writing stylus pen (STYLUS PEN) 101e is provided to be used only for KEYBOARD 101c and MOUSE 101d.

The MEDIUM 103 is such as a floppy disc or an IC memory card for storing the image data obtained by IMAGING DEVICE 102 and DATA PROC UNIT 101. By means of MEDIUM 103, the image datum obtained by DATA PROC UNIT 101 is transferred to DATA PROC UNIT 101'.

FIG. 1 shows a case where MEDIUM 103 stores an image datum obtained by IMAGING DEVICE 102 and the image datum in MEDIUM 103 is processed by DATA PROC UNIT 101.

In DATA PROC UNIT 101, COMP 101a reads the image data from MEDIUM 103 and stores it into a memory provided in COMP 101a. A voice signal captured by MIC 104 is converted into digital voice data and stored also in the memory in COMP 101a.

Operating KEYBOARD 101c or MOUSE 101d, the user confirms by monitoring MON 101b that the image datum is stored in the memory and determines a position of an icon on MON 101b by hearing the voice stored in the memory. A multimedia document, which is usually called a text datum, for the captured image and voice data can be made by the user, using KEYBOARD 101c.

In the above explanation, an example of using KEYBOARD 101c and MOUSE 101d is shown. However, recently, STYLUS PEN 101e is widely used instead of KEYBOARD 101c and MOUSE 101d. When STYLUS PEN 101e is used, a tablet, into which data can be written and on which data can be displayed, is used as a monitor. This kind of tablet will be called a "write and display tablet" hereinafter.

When the user wants to transfer the text data from DATA PROC UNIT 101 to DATA PROC UNIT 101', the text data can be transferred by using MEDIUM 103. The text data stored in the memory in COMP 101a of DATA PROC UNIT 101 are stored in MEDIUM 103 once and transferred to the memory in COMP 101a of DATA PROC UNIT 101' as shown by a dotted line in FIG. 1.

As seen from the above explanation, there are problems in the prior art that every time the image datum is captured, processed and transferred, the user must treat IMAGING DEVICE 102, MEDIUM 103, MIC 104, KEYBOARD 101c and MOUSE 101d or STYLUS PEN 101e. In particular, the user must disconnect and connect MEDIUM 103 from DATA PROC UNIT 101 to 101' or the computer system such as the personal computer.

## SUMMARY OF THE INVENTION

Considering the problems in the prior art, an object of the present invention is to improve the multimedia capturing apparatus so that the user can operate it in more simple and easy than the prior art.

The object can be achieved by:

(1) making the hand writing stylus pen have functions not only for pointing an icon and/or writing a letter or an image on a write and display tablet provided in the data processing unit but also for capturing image and voice information with an imaging device and a microphone provided in the hand-writing stylus pen, respectively;

(2) providing, to the hand-writing stylus pen, capturing devices of information on image and voice, memory means for storing the captured image and voice data or a text datum sent from the data processing unit, a data transmitter for transmitting the stored image and voice data to the data processing unit or the stored image and voice data and the text data to another data processing unit of another information capturing apparatus or to a computer system such as the personal computer and a data receiver for receiving data from the data processing unit, wherein the text datum is a datum for a comment or message of the user on the captured image and voice data and is made by handling the hand writing stylus pen on a write and display tablet provided in the data processing unit; and

(3) providing, to the data processing unit, a data receiver for receiving the image and voice data from the hand writing stylus pen, a data memory for storing the image and voice data or the text datum provided in the data processing unit, a data transmitter for transmitting the data stored in the data memory to the hand writing stylus pen, a write and display tablet for selecting operation menus of the data processing unit by handling the hand writing stylus pen and a central processing unit (CPU) for processing the image and voice data with the write and display tablet so as to produce the captured image on the tablet, the captured voice through a speaker and the text datum and to perform the data transfer between the hand writing stylus pen and